

## **Title: Outdoor Algebra**

### **Brief Overview:**

This concept development unit develops an understanding of equalities and inequalities. Students explore finding the missing number (variable/unknown) using the concept of a balanced scale. They will represent and compare addition and subtraction expressions using ( $<$ ,  $>$ , or  $=$ ) and justify ideas and solutions with numbers, words, and symbols. The theme of outdoor activities will help motivate and engage students as well as providing examples of real-life algebraic situations that they can connect with.

### **NCTM Content Standard:**

1. Represent and analyze mathematical situations and structures using algebraic symbols.
2. Use mathematical models to represent and understand quantitative relationships.

### **Grade/Level:**

Grade 3

### **Duration/Length:**

Three lessons (each lesson approximately 60 minutes in length)

### **Student Outcomes:**

Students will:

- Represent relationships using appropriate relational symbols ( $<$ ,  $>$ , or  $=$ ) with operational symbols (+/-) on either side
- Find the missing number (unknown) in a number sentence (equation) using operational symbols (+/-)
- Justify ideas or solutions with mathematical concepts or proofs

### **Materials and Resources:**

Day 1:

- Balance
- Manipulatives (ex: cubes, counting bears or dinosaurs, red/yellow counters, etc.)
- Wet erase markers
- Sets of digit cards 1-6
- Answer Key
- Pre-Assessment

- “Large Scales” (laminated or in sheet protectors)
- Explore Day 1
- I do, We do
- Total-Part-Part Organizer (copy back to front and laminate or use sheet protectors)
- You do
- Variable Victory
- Enrich/Challenge
- Exit Ticket 1

Day 2:

- Manipulatives
- Explore Day 2
- Football Game Scores
- We do-Day 2
- I’m the Greatest Game
- Enrichment Four-Square
- Saturn See Saw Exit Ticket
- Answer Key

Day 3:

- Human Number Line Cards (laminated and cut out)
- Problem Solving Model
- Independent Problem Solving
- Bug Club Challenge
- Race to Recess Board Game and Cards (laminated and cut out sets of cards)
- Cubes to use as markers for game
- Calculators
- We Do-Day 3
- Problem Solving Organizer
- Manipulatives
- Pencil and paper or white board

Day 4:

- Summative Assessment
- Answer Key

**Development/Procedures:**

**Day 1**

Students will be able to create a number sentence and solve for a missing number (0-100). They will use a “total-part-part” organizer, models, and addition or subtraction.

### **Pre-assessment**

- In order to evaluate students' prior knowledge, have students independently complete *Pre-Assessment*. Students should be able to add and subtract with regrouping and compare inequalities using  $>$ ,  $<$ , or  $=$ . They should also be able to create a number sentence and solve to find the missing number.
- Use *Answer Key* to check students' work. The answer key is found at the end of the unit.

### **Engagement**

- Have students close their eyes and imagine they are at their favorite playground.
- Ask students to describe the playground to their neighbor.
- Display the balance and ask students if the balance reminds them of anything they described at the playground.
- Have students share responses with the class (see saw).
- Ask why the balance made them think of a seesaw? (The heavy side goes down, the light side goes up) Where else might you see something like this?
- Tell the students that the manipulatives (choose from any available or see list under materials) represent children at the playground.
- Hand a student six manipulatives to place on one side of the scale and count the total. Discuss what happens to the seesaw and why.
- Place two manipulatives on the opposite side. Ask students to discuss how many more manipulatives are needed to make the seesaw balanced.

### **Exploration**

- Provide students with a copy of *Large Scales* and *Explore Day 1*.
- Provide each table group with a variety of manipulatives and dry or wet erase markers. Allow students to choose what tools to use.
- Tell students to find as many combinations as possible in 10 minutes.
- Facilitate discussions between group members. As you walk around use the following questions to assist students.
  - What do you know about the number 27? (odd, 2 tens and 7 ones, 3 nines,  $26+1$ ) How can/did that help you find a solution?
  - What other strategies could you use to solve the problem, if your method is not working?
  - What other numbers will work?
  - Are there some numbers that will not work? How do you know?
  - Think about the seesaw. Would it be balanced? How do you know?
  - Where did you get 27? Prove it with models, pictures, or numbers. (This will give you an idea of where they are: concrete, abstract, number sense, etc.)
- Extension idea: If they used models ask them to try and solve with pictures or if they used pictures encourage them to prove with only numbers.

- Share strategies and solutions.

## **Explanation**

*Teacher directed:*

- Distribute *Total-Part-Part Organizer* and *I do, We do* to each student.
- Have a student read the question out loud.
- Show the students the “total-part-part” organizer on their resource.
- Explain that you will use this and models to help solve the problem.
- Use the large organizer for models and the smaller one, on the same sheet as the problem, to record numbers.
- Ask:
  - What important information do we need to find in the chart. (Swim team=28 people total)
  - What information do we not need? Cross out basketball and soccer.
  - Where should 28 go in our organizer? (total)
- Have students count 28 manipulatives
- Place these in the total box and write the number, 28, next to them. Also record the number, 28, in the smaller organizer.
- Ask:
  - What is the next piece of important information that we need? (Girls=15)
  - Where should that go in our organizer? (part)
  - What do we need to find out? (number of boys)
  - Where should 28 go in our organizer? (part)
- Explain that in math an unknown number is called a variable. We use a symbol to represent the missing number.
- Discuss what letter could be used to represent the missing information. (example: b) Write  $15+b=28$  on the scale on *I do, We do*.
- Think aloud: I know that there are 15 girls. I am thinking... how many more people do I need to make 28? I know that 10 more students would give me 25. So that means I need 3 more to get to 28.  $10+3=13$   $15+13=28$
- Have students check with cubes on their organizer. They should count 13 more cubes and put them in the empty (b) “part” box. Then count both part boxes to make sure that they have 28 altogether.
- Go back to the balance used for the engagement. Place 28 cubes on one side and 15 on the other. Ask how many more cubes are needed to “balance” the balance. Place 13 more cubes on the scale and discuss the results.
- Have students write  $b=13$  and then rewrite the number sentence with the value.

*Guided practice:*

- Have a student read the second problem aloud.
- Ask:
  - What do we know? (Total flowers=31 and Thursday=18)
  - Is there any information we don’t need?
  - What does 31 represent? A total or a part? (total)

- Build it with models in the large organizer and record the number in the smaller one.
- Ask:
  - What is the next piece of important information that we need? (Thursday)
  - Where should that go in our organizer? (part)
  - What do we need to find out? (number of flowers on Friday) Remind students that this is called an unknown.
  - Where should this go in our organizer? (part)
  - What variable do we want to represent the unknown number? (example:  $f$ )
- Discuss: To find the missing number in the last problem, we counted up. What is another strategy we can use to find an answer?
- Give students a few minutes to share with partners or groups.
- Share thoughts and responses.
- Choose a subtraction strategy to work through together ( $\text{total} - \text{part} = \text{part}$ ). Write  $31 - 18 = f$  on the scale on *I do, We Do*.
- Have students solve for  $f$  using a subtraction strategy. Students could take 18 counters out of their total box and count the ones left. They could also use a subtraction number sentence:  $31 - 18 = 13$  What does  $f$  equal? ( $f = 13$ )
- Re-read the problem. Does the equation represent the problem? (No, it does not because he finds 18 flowers then finds  $f$  more to get a total of 31.)
- Represent the problem  $18 + f = 31$
- Ask students to add  $18 + 13$  to prove that their answer is correct.

### Extension

- Distribute *You do- Day 1*.
- Tell students to complete the first problem with a partner and the second on their own.
- Monitor understanding and facilitate using questions.
- Identify students for reteach and enrich. All other students play “Variable Victory”.

### Differentiation

- Reteach
  - Use actual balance and cubes to solve problems or <http://illuminations.nctm.org/activitydetail.aspx?id=26>. (Illuminations Balance)
  - Distribute laminated *Total-Part-Part Organizers* can be used by students to record thinking.
  - Write  $14 + c = 36$  ( $c = 22$ ) on the board. Discuss ways of solving and guide students using cubes, questions, and numbers.
  - Use actual balance or website to check answers.
  - Write  $27 + j = 42$  ( $j = 15$ ) and  $v - 19 = 24$  ( $v = 43$ ) on the board.
  - Observe students working.
  - Send students that answer both questions correctly, without support, to play *Variable Victory*.

- If students are struggling, work through problems together.
- Enrich
  - Students should complete *Enrich/Challenge-Day 1*.
  - Ask questions to extend thinking:
    - What do you know that will help you solve this?
    - What's another way to solve the problem?
    - Write a subtraction equation and an addition equation that could both be used to solve the problem.
    - Will it be the same if we use different numbers? Why or why not?
    - What would happen if we...?

### Evaluation

- Listen to discussions and reasoning throughout the lesson to check for understanding.
- Distribute *Exit Ticket- Day 1*
- Use this exit ticket to assess students' abilities to create a number sentence and solve for a missing number.

## Day 2

Students will compare numerical relationships using the  $>$ ,  $<$ , and  $=$  symbols.

### Engagement

- Students will work in partners for this activity.
- Have each partner scoop up 2 handfuls of manipulatives and count them on their desk.
- Ask students to create a number sentence comparing the number of manipulatives that you have to the number of manipulatives that your partner has (Example: if student A has 67 and student B has 89 an appropriate number sentence would be  $67 < 89$  or  $89 > 67$ ).
- Ask students how they know one amount is greater than another. Reference place value: 6 tens is less than 8 tens)

### Exploration

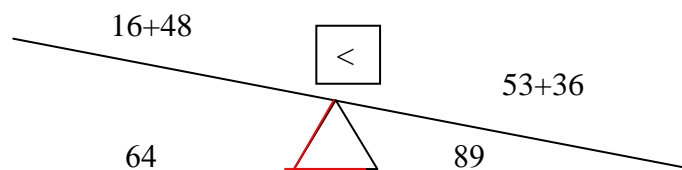
- Distribute *Explore Day 2*.
- Explain to students that they may use any math tools to explore and that they can discuss solutions with their partners.
- Ask students to draw a picture to represent the see saw.
- Walk around to facilitate discussions between partners.
- Ask questions to encourage deeper thinking:
  - How can you prove your drawing makes sense?
  - What words and numbers could you use to explain your thinking?

- What other strategies could you try?
- On the board, or using a document camera, have students share responses.

## Explanation

### Teacher Directed

- Distribute *I do - Day 2* and have students take out their highlighters
- Have a student read the problem out loud.
- Ask:
  - What is the chart showing? (points per game)
  - Is there any information we don't need? (No)
  - What number expressions can we use to find the Ravens' total points? ( $16+48$ )
  - What number sentence can we use to find the Dolphins' total points? ( $53+36$ )
- Have students evaluate the expressions and write the sum below the scale.  
(Ravens: 64 and Dolphins: 89)
- Once both expressions are evaluated, model comparing numbers.
- Think aloud: I know that 6 tens is less than 8 tens, so 64 is less than 89.
- Show the relationship on balance using <http://illuminations.nctm.org/activitydetail.aspx?id=26> (type  $16+48$  on left side and  $53+36$  on right side. Press enter and observe results.)
- Discuss: Why did the balance tip to the Dolphins' side? (Because they have more points.)



- Use website results to draw a balance, with the expressions written on each side.
- Discuss the correct symbols used to compare numbers.  
> greater than, < less than, and = equal to.
- Use highlighters to make the correct symbol out of the triangle in the balance.
- Distribute *We do-Day 2*.

### Guided Practice

- Have a student read the problem.
- Highlight important information and key words.
- Ask:
  - What are we comparing? (total amount of money)
  - How can we figure out how much money Monica had? ( $67-15$ )
  - How can we figure out how much money Makiah had? ( $31+19$ )
  - Predict what the scale will look like when we enter the expressions onto the website.
  - What symbol should be used to compare? ( $52 > 50$ )

- Show relationship on balance using <http://illuminations.nctm.org/activitydetail.aspx?id=26> (Illuminations Balance)
- Have students draw and fill in the balance on the handout on their own.

### Extension

- Tell students to complete the *You Do* problem on the bottom of *We do Day 2*
- Students should work independently.
- Monitor understanding and facilitate using questions.
- Identify students for reteach and enrich. *All other students* should play *I'm the Greatest! Game*.

### Differentiation

- Reteach
  - Use base-ten blocks to compare a number to an expression.
  - If students are having trouble comparing, only practice comparing two numbers. (Example:  $49 > 23$ ) Build numbers with base-ten blocks and discuss ways to tell which is greater or less.
  - If students are having trouble with addition and subtraction, use base-ten blocks or [http://nlvm.usu.edu/en/nav/category\\_g\\_2\\_t\\_1.html](http://nlvm.usu.edu/en/nav/category_g_2_t_1.html) (select addition or subtraction) to practice adding and subtracting numbers
  - When students are able to solve problems without support, send them to play *I'm the Greatest! Game*.
- Enrich
  - Have students independently complete *Enrich/Challenge Four Square*
  - When they are finished, they can play *I'm the Greatest! Game*

### Evaluation

- Have students complete *Saturn See Saw Exit Ticket* independently.
- Use it to identify students' understanding of comparing numerical relationships using the  $>$ ,  $<$ , and  $=$  symbols.

### Day 3:

Students will apply their knowledge of comparing expressions and finding the missing number in equations in order to solve problems and justify ideas or solutions with mathematical concepts or proofs.

### Engagement

- Distribute *Human In/Equality Cards* to students.
- Ask students to use these cards to create human equations.
- Have 4 number volunteers come up and hold out their number. Then, ask which symbols can go between the equations or expressions to make them true.



(Example:  $13+11>10-4$ ). The rest of the class will vote using thumbs up (true) and thumbs down (false).

- Make at least four different equations. This could also be done with three numbers (example:  $29 = 13+16$ ).
- Give each table group a set of cards and have them create as many true number sentences on their desk as they can.

### Exploration

- Distribute *Explore Day 3*.
- Distribute manipulatives and allow students to work in pairs to create as many combinations as possible.
- Walk around and facilitate discussions:
  - What do you know that will help you solve this problem?
  - What is another way to solve the problem?
  - Will subtraction help solve the problem? Why or why not?
  - Will it be the same if we use different numbers? Why or why not?
  - How can one set of numbers help you find another?
  - What would happen if we...?
  - How does this relate to what we did yesterday?
  - How does can knowledge of number relationships help you?
- Share responses and discuss efficient ways of solving.

### Explanation

#### *Teacher Directed*

- Distribute a copy of *Problem Solving Model* to each student.
- Explain that they are going to apply their knowledge of evaluating expressions in order to justify their solutions. Have a student read the problem aloud. Discuss what important information needs to be underlined (Rays have 14 girls and 23 boys. The Tigers have 21 girls and 19 boys).
- Model how to evaluate both expressions  $14 + 23$  \_\_\_\_  $21 + 19$ .
- Label the left Rays and the right Dolphins. Explain that labeling numbers helps to communicate thinking. You could also label 14 and 21 with a G and 23 and 19 with a B.
- Ask students to evaluate each side using any strategy.
- Share sums and discuss where to write them in the box (37 should go on the left line and 40 should go on the right).
- Think aloud: Now I need to compare the two sums. How can I tell which one is greater? Encourage students to share responses.
- Place  $<$  symbol between 37 and 40.

Ask students how you can explain which one is greater using words and numbers? ("I know the three in the tens place is less than the four in the tens place, so 37 is the smaller number.") You could also have students draw 3 tens and 7 ones and 4 tens to show that 37 is smaller. You could also subtract  $40-37$  to prove that 37 is 3 less than 40.

#### *Guided Practice*

- Give students copies of *We-Do Day 3*.
- Explain that “true” means correct.
- Tell students that they need to test each inequality to discover which one is correct and which ones are not.
- Start with a. Have students simplify each expression and record their answer underneath each side. Then, bring down the symbol and ask if 474 is less than 419. Ask a student to explain using their knowledge of place value.
- Repeat for b-d. Even though the correct answer is b, encourage students to test the others to make sure that b is the only correct answer.

### **Extension**

- Distribute *Independent Problem Solving* to each student.
- Have students complete this independently.
- Monitor progress and identify students for reteach or enrich activities.
- As students finish, have them play *Race to Recess*.

### **Differentiation**

- Reteach
  - Meet with students struggling to explain thinking.
  - Guide students as they work through the *Problem Solving Organizer*.
  - Provide students with base-ten blocks if they want to build numbers. You could also use the illuminations balance.
- Enrich
  - Have students independently complete *Bug Club Challenge*.

### **Evaluation**

- Observations can be made during *Race to Recess*
- Collect *Independent Problem Solving* to evaluate students’ ability to compare expressions. It should also be used to assess their ability to explain and justify solutions.

### **Summative Assessment:**

Students will take the summative assessment which will assess their ability to find the unknown in a number sentence and represent and compare relationships between numbers using the symbols  $>$ ,  $<$ , or  $=$ . The brief constructed response will evaluate their ability to justify solutions

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Pre-Assessment

Find the missing number:

1)  $13 + \underline{\quad} = 22$

2)  $\underline{\quad} - 33 = 65$

Compare using  $>$ ,  $<$ , or  $=$ .

3)  $43 - 19 \underline{\quad} 29 + 23$

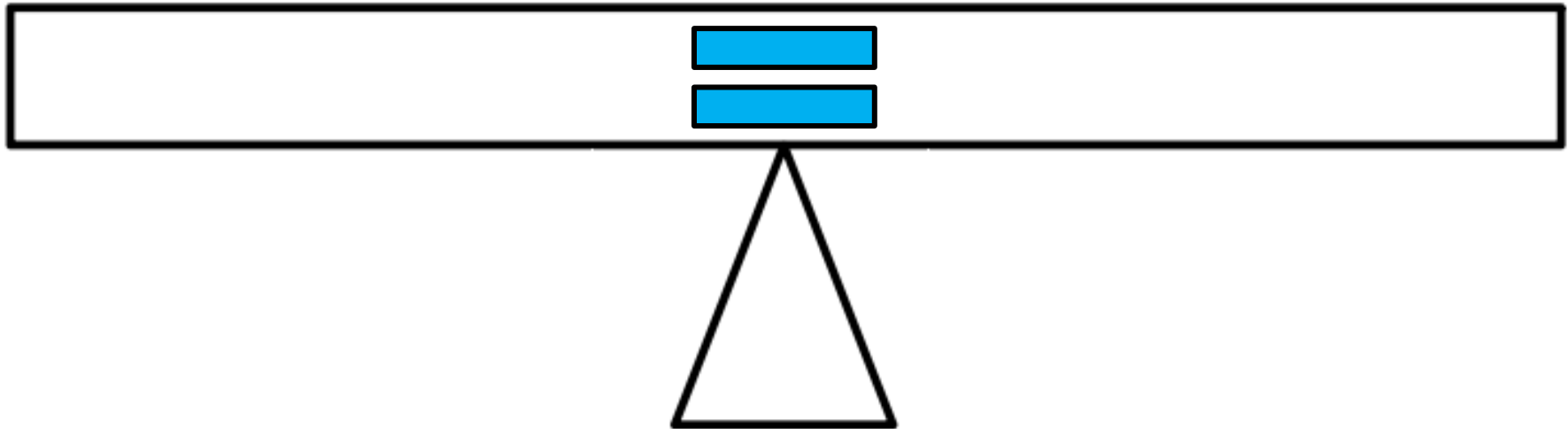
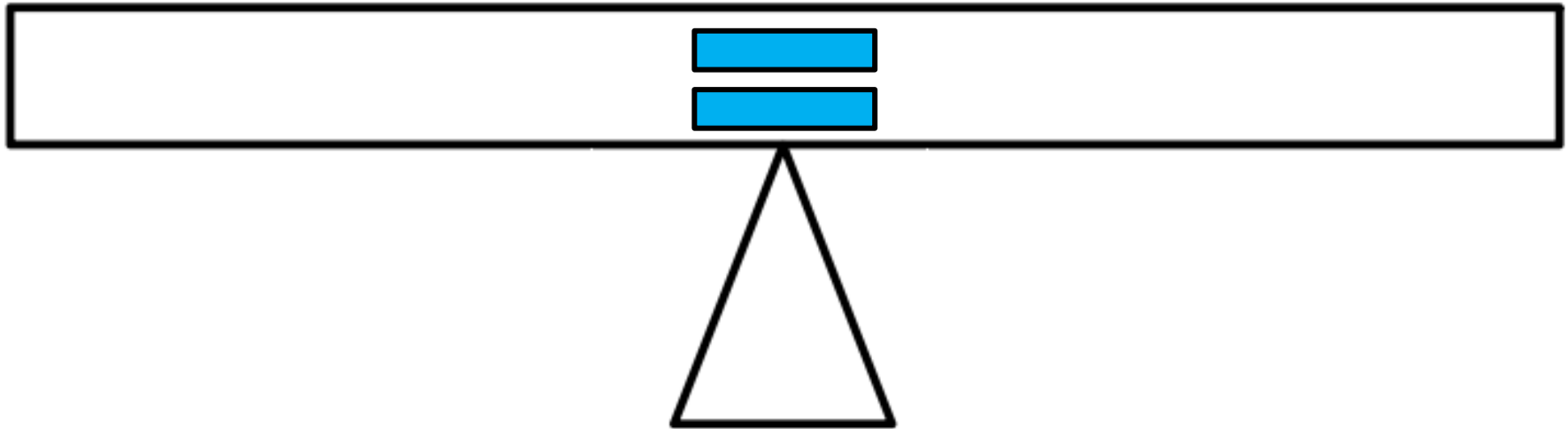
4)  $18 + 39 \underline{\quad} 50 - 16$

5) The third graders wanted to play flag football. They had 16 flags, but 25 kids wanted to play. How many more flags do they need?  
Write a number sentence.

\_\_\_\_\_



# Large Scales



# Explore - Day 1



Last night a group of blue Martians visited a playground. They were playing on the see saw. On one side of the see saw, 27 Martians piled on. The funny thing about Martians is that every Martian weighs the same. What combinations of girl Martians and boy Martians could there be on the other side to balance the see saw?

# Explore - Day 1



Last night a group of blue Martians visited a playground. They were playing on the see saw. On one side of the see saw, 27 Martians piled on. The funny thing about Martians is that every Martian weighs the same. What combinations of girl Martians and boy Martians could there be on the other side to balance the see saw?

## Total-Part-Part Organizer

total	
part	part

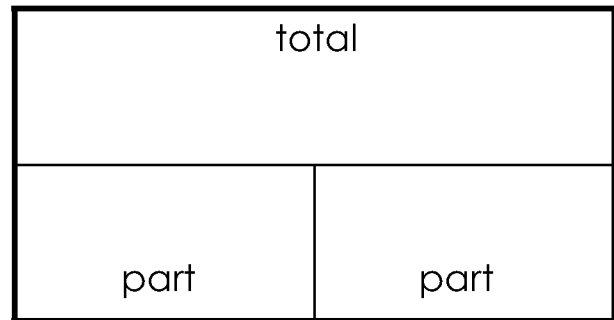
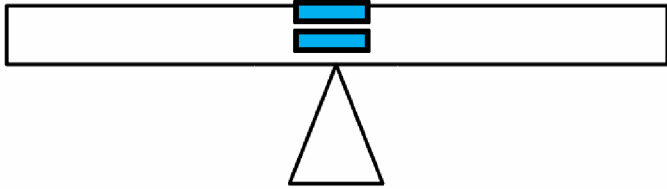
total	
part	part

I do:

Third Grade Teams	
Team	Number of Members
Swim	28
Basketball	15
Soccer	14

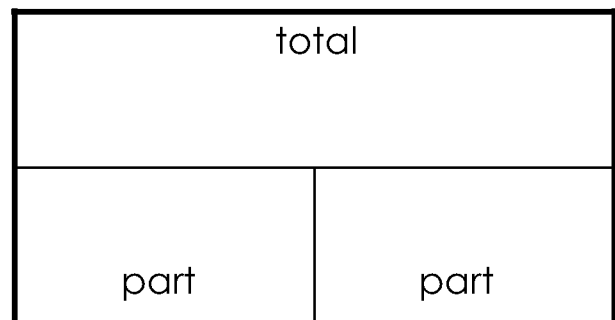
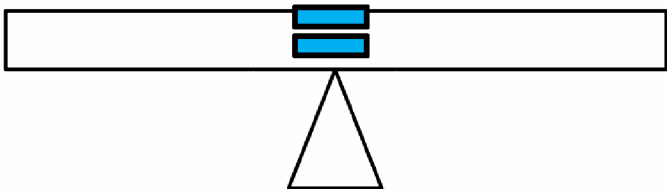


Fifteen members of the third-grade swim team are girls.  
How many are boys?



We do:

Marcus collected 18 flowers on Thursday and some more on Friday. Now he has 31 flowers. How many flowers did Marcus collect on Friday?

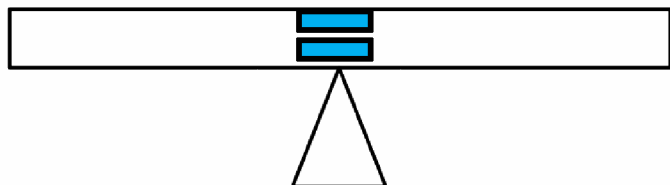


# You Do Day 1

**You do:**

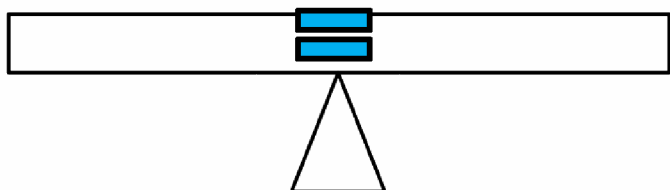
Baseball Souvenirs	
Item	Cost
Hat	\$12
T-shirt	\$18
Poster	\$3
Pennant	\$4

1. Anna's mom gave you some money to spend at the baseball game. She bought a T-shirt. Now she has \$33 left. How much money did her mom give her? \*Bonus: What else can she buy with her leftover money?



total	
part	part

2. Meghan read 15 minutes for homework on Monday and 15 minutes on Tuesday. She read 23 pages on Monday and some more on Tuesday. Now she has read 42 pages. How many pages did Meghan read on Tuesday?



total	
part	part



Score

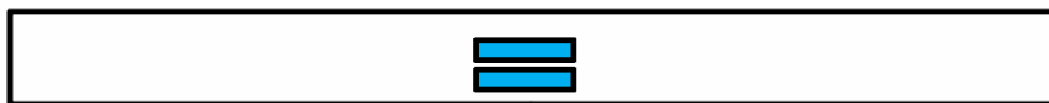
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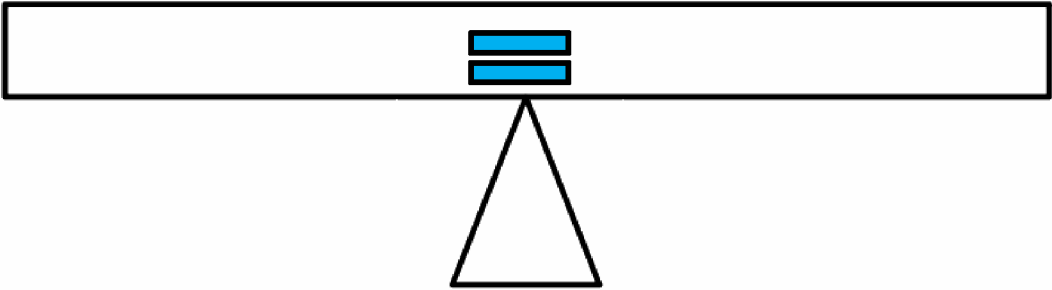


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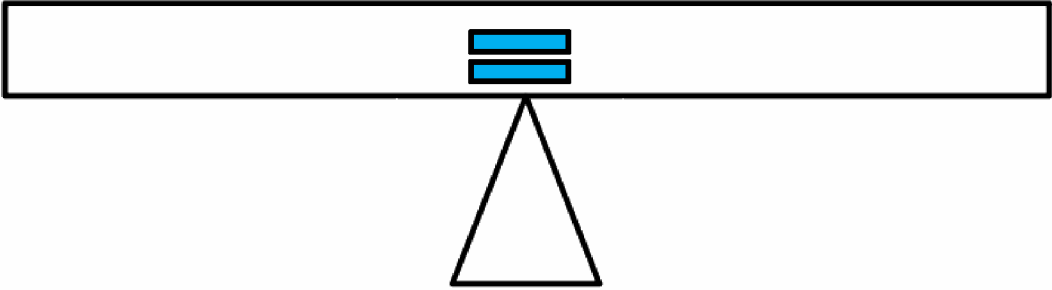


Score

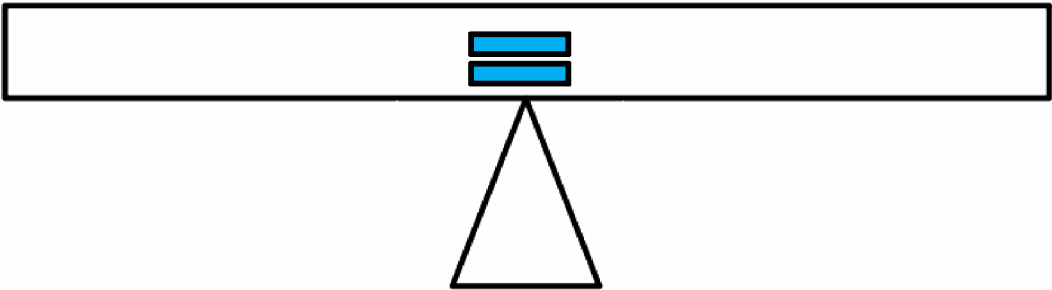
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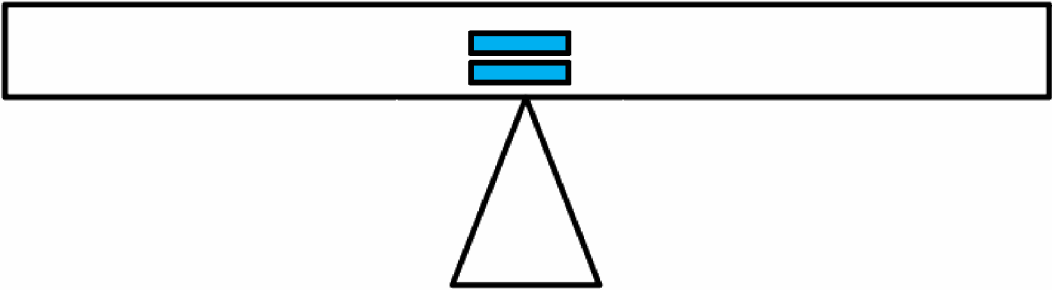
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# Variable Victory

## You will need:

- Packs of digit cards #1-6
- Balance Worksheet (for each player)
- At least 2 players

## Directions:

Player 1:

1. Roll all 4 number cubes.
2. Create two 2-digit numbers.
3. Decide where to place the two numbers on the balance. Record on your Balance Worksheet scale. (Round One)
4. Solve for  $s$ . This is your score for the first round. Record under "Score".

Player 2:

1. Repeat steps 1-4 for the first round.

## How to Win:

The player with the highest score at the end of eight rounds wins!

\*Hint: Choose your 2-digit numbers and placement carefully. You want " $s$ " to equal the bigger number for a bigger score.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Enrich/Challenge Day-1

Teachers want the students to be split evenly between the playground and the kickball field. Make sure each side is balanced.  
Solve for the unknown number.

1.  $7 + 19 = 8 + 10 + k$   
\_\_\_\_\_ = \_\_\_\_\_ + \_\_\_\_\_

$k =$  \_\_\_\_\_

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2.  $52 - 7 = 11 + h + 24$   
\_\_\_\_\_ = \_\_\_\_\_ + \_\_\_\_\_

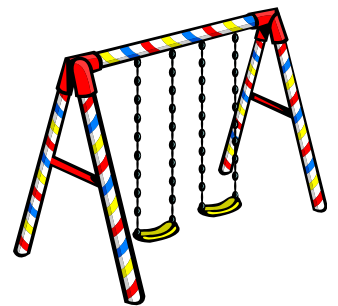
$h =$  \_\_\_\_\_

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3.  $8 + 6 + m = 43 - 16$   
\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

$m =$  \_\_\_\_\_

After you have found the unknown numbers, check with a partner. If you are both correct, play Variable Victory.



Name: \_\_\_\_\_ Date: \_\_\_\_\_

### EXIT TICKET - Day 1

Using strategies from today's math class, find the missing number.

1)  $38 + y = 51$

$y = \underline{\hspace{2cm}}$

2)  $r - 49 = 26$

$r = \underline{\hspace{2cm}}$

3) Skylar bought 16 stickers on Wednesday and some more on Friday. Now she has 24 stickers. How many stickers did she buy on Friday? Write a number sentence to solve:

\_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_

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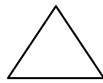
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# Explore - Day 2



The blue Martians came back to visit but this time they brought their green cousins. They were playing on the see saw again. On the left side of the see saw, there were 15 blue Martians and 18 green Martians. On the right side of the see saw, there were 11 blue Martians and 23 green Martians. The funny thing about Martians is that every Martian weighs the same, no matter the color. Draw a picture to show what the see saw would look like. Be ready to explain how your picture is correct.

L

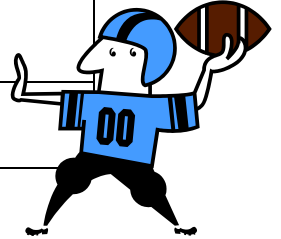


R


**I do:**

## Football Game Scores

Team	Game 1	Game 2
Ravens	16	48
Dolphins	53	36



Compare the total number of points scored by the Ravens to the total number of points scored by the Dolphins.

Ravens \_\_\_\_\_  \_\_\_\_\_ Dolphins

Name: \_\_\_\_\_



## We do:

Monica had \$67. She gave \$15 to Kevin to buy crayons. Makiah had \$31. Melech gave him \$19 to buy some candy.

Who had more money when they went to the store?

Compare the total amount of money Monica had to the total amount of money Makiah had.

Monica \_\_\_\_\_  \_\_\_\_\_ Makiah

## You do:

Jeff has 357 trading cards and gives away 42 to his brother. Paul has 305 baseball cards. He receives 35 more for his birthday. Which number sentence represents the relationship between the number of cards Jeff has and the number of cards Paul has?

Ⓐ  $357 + 35 < 305 - 42$

Ⓑ  $357 - 42 < 305 + 35$

Ⓒ  $357 - 42 > 305 + 35$

Ⓓ  $357 + 35 > 305 - 42$

Jeff has 357 trading cards and gives away 42 to his brother. Paul has 305 baseball cards. He receives 35 more for his birthday. Which number sentence represents the relationship between the number of cards Jeff has and the number of cards Paul has?

Ⓐ  $357 + 35 < 305 - 42$

Ⓑ  $357 - 42 < 305 + 35$

Ⓒ  $357 - 42 > 305 + 35$

Ⓓ  $357 + 35 > 305 - 42$



## I'm the Greatest! Game

Turn a stack of 1-9 digit cards upside down.

Each player should flip over 4 cards and create an expression with 2 two-digit numbers.

Evaluate both players' expressions and compare the sums and differences with  $>$ ,  $<$ , or  $=$

How to win: Each time a player's number is greater, they earn 5 points.

The player with the most points after 6 rounds wins.

Player 1

Player 2

*Show Your Work!*

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} \boxed{\phantom{00}} \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} \boxed{\phantom{00}} \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} - \underline{\hspace{1cm}} \boxed{\phantom{00}} \underline{\hspace{1cm}} - \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} \boxed{\phantom{00}} \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} - \underline{\hspace{1cm}} \boxed{\phantom{00}} \underline{\hspace{1cm}} - \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} \boxed{\phantom{00}} \underline{\hspace{1cm}} - \underline{\hspace{1cm}}$$


Player 1's Points:

Player 2's Points:

If you finish early: go to <http://illuminations.nctm.org/activitydetail.aspx?id=26> to check your answers.

**Enrich/Challenge**  
**Four Square**

Compare the expression using  $<$ ,  $>$ , or  $=$ .

1.  $743 - 627$    $283 + 154 + 55$

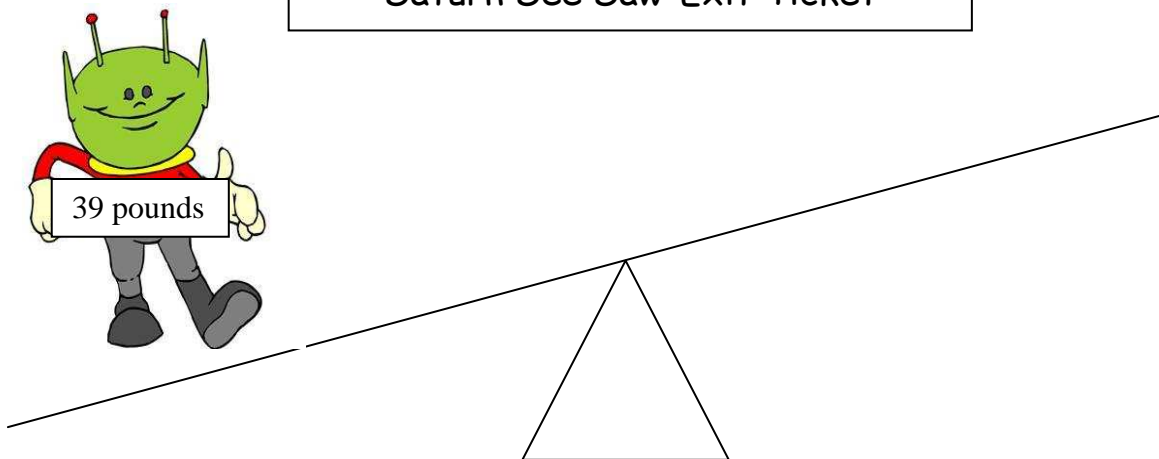
2.  $68 + 39 + 22$    $775 - 629$

3.  $99 + 33 + 55$    $800 - 688$

4.  $503 - 285$    $901 - 683$

Name: \_\_\_\_\_

## Saturn See Saw-Exit Ticket



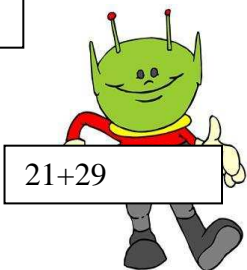
39

>

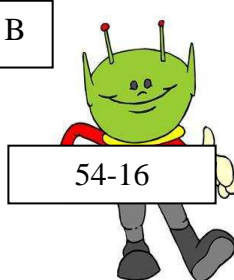
\_\_\_\_\_

Aliens from Saturn can weigh different amounts. What alien can make this inequality true?

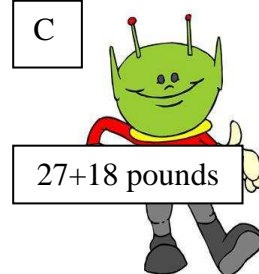
A



B



C



Explain why your answer is correct. Use what you know about comparing numbers in your explanation. Use words and/or numbers in your explanation.

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## Human In/Equality Cards

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

<

>

=

+

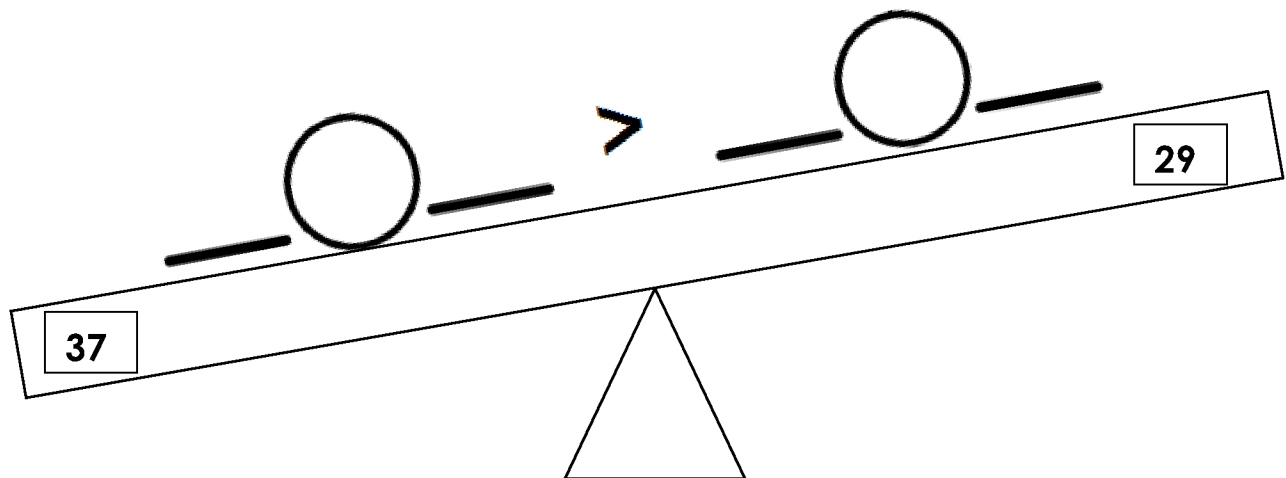
-

Name: \_\_\_\_\_



# Explore Day 3

The blue Martians came back last night! (Remember: they all weigh the same amount) 37 Martians piled on the left side of the see saw and 29 Martians climbed onto the right side. Create as many combinations of girls and boys as you can, so that each side equals its total.



# Problem Solving-Model

Kyle loves baseball! He plays on a team with a lot of his friends. His team is the Rays and it has 14 girls and 23 boys. The Tigers, their rivals, have 21 girls and 19 boys.

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} \bigcirc \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

**Step A** Compare the total number of players on the Rays with the total number of players on the Tigers.

$$\underline{\hspace{2cm}} \bigcirc \underline{\hspace{2cm}}$$

## Step B

Explain why your answer is correct.

Use what you know about comparing numbers in your explanation.

Use words and/or numbers in your explanation.

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### Day 3

Name: \_\_\_\_\_

# We do:

Which number sentence below is true?

☐ a.  $145 + 329 < 564 - 145$

☐ b.  $145 + 329 > 564 - 145$

☐ c.  $564 - 145 > 145 + 329$

☐ d.  $145 + 329 = 564 - 145$

### Day 3

Name: \_\_\_\_\_

# We do:

Which number sentence below is true?

☐ a.  $145 + 329 < 564 - 145$

☐ b.  $145 + 329 > 564 - 145$

☐ c.  $564 - 145 > 145 + 329$

☐ d.  $145 + 329 = 564 - 145$

# Independent Problem Solving

The Orioles score 47 runs during June and 25 runs in July. The Yankees scored 59 runs in June and 18 runs in July.

$$\underline{\quad\quad} + \underline{\quad\quad} \bigcirc \underline{\quad\quad} + \underline{\quad\quad}$$

**Step A** Compare the Orioles' total runs to the Yankees' total runs.

$$\underline{\quad\quad\quad} \bigcirc \underline{\quad\quad\quad}$$

**Step B**

Explain why your answer is correct.

Use what you know about comparing numbers in your explanation.

Use words, numbers, and symbols in your explanation.

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# Race to Recess!

## What you need:

- game board
- game cards
- number cube
- pencil/paper or whiteboard
- cubes (marker for each player)
- calculator
- at least 2 players

## Directions:

Player 1:

1. Pick a game card from the top of the pile.
2. Decide if the equality or inequality is true or false using pencil/paper or whiteboard.
3. State "true" or "false" aloud to Player 2.
4. Player 2 will check the equality or inequality using the calculator.
5. If player 1 is correct, he/she rolls the number cube and moves that many spaces on the game board.

Player 2:

1. Repeat steps 1-3
2. Player 1 will check the equality or inequality using the calculator.
3. If player 2 is correct, he/she rolls the number cube and moves that many spaces on the game board.

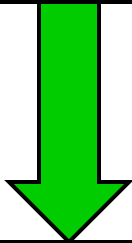
## How to Win:

The player that reaches or passes "Go to Recess!" first wins the game!

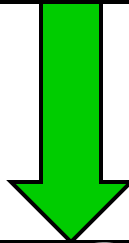
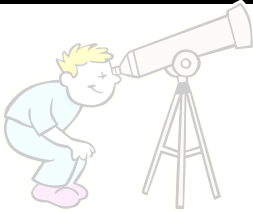
# Race to Recess!

**Start**

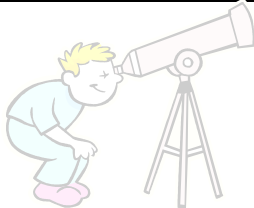
Homework  
Pass: Follow  
the arrow for  
a shortcut!



Homework  
Pass: Follow  
the arrow for  
a shortcut!



Extra  
Credit:  
Move ahead  
3 spaces



You forgot  
your  
homework:  
Move back 2  
spaces



Place game cards face  
down here

Extra  
Credit:  
Move ahead  
3 spaces

**Go to  
Recess!**



Oops! You  
need recess  
equipment:  
Miss a turn



# Race to Recess!

Game Cards

$693 - 329 < 234 + 86$	$87 - 18 < 41 + 12$	$65 + 49 = 187 - 65$
$243 + 188 < 465 - 197$	$915 - 610 < 585 - 270$	$57 + 19 > 23 + 17$
$643 - 329 < 234 + 86$	$13 + 56 < 49 + 26$	$357 - 42 < 305 + 35$
$352 + 198 = 752 - 198$	$849 - 327 > 283 + 237$	$593 - 218 > 144 + 25$
$76 - 28 > 32 + 55$	$354 - 218 < 334 + 95$	$23 + 68 = 38 + 15$
$254 + 41 > 405 - 34$	$176 - 128 = 132 + 155$	$318 - 254 > 395 + 34$
$168 - 123 < 138 + 115$	$363 - 152 = 334 - 145$	$89 + 14 > 54 + 43$

# Problem Solving Organizer

**Math Equations:**

**Represent with Models:**

Compare the numerical expressions using  $>$ ,  $<$ , or  $=$ .

$67 - 29$  \_\_\_\_  $38 + 14$

\_\_\_\_ ○ \_\_\_\_

**Explain your thinking:**

I know \_\_\_\_\_ is \_\_\_\_\_ than \_\_\_\_\_

because \_\_\_\_\_

\_\_\_\_\_

I drew a picture and noticed \_\_\_\_\_

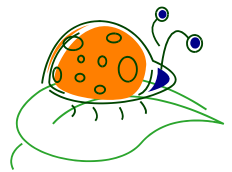
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ is \_\_\_\_\_ less than \_\_\_\_\_.

**Check your work:**

# The Bug Club Challenge



The Bug Club goes to the Nature Preserve every week to collect cool insects. The guide only allows them to collect a certain amount of bugs each week. The "catches" can only include caterpillars, butterflies, and ladybugs. Use the clues to find how many of each insect is caught.



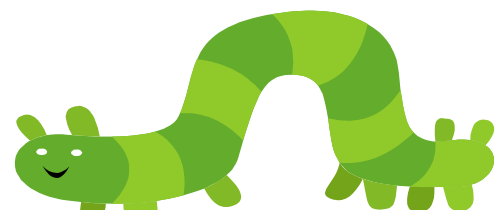
Week	Caterpillars	Butterflies	Ladybugs	Total
1	4 more than butterflies $c = \underline{\hspace{2cm}}$	8	$l = \underline{\hspace{2cm}}$	23
2	14	$b = \underline{\hspace{2cm}}$	3 less than caterpillars $l = \underline{\hspace{2cm}}$	37
3	$c = \underline{\hspace{2cm}}$	3 more than ladybugs $b = \underline{\hspace{2cm}}$	12	29
4	9	$b = \underline{\hspace{2cm}}$	19 more than the caterpillars $l = \underline{\hspace{2cm}}$	41

Compare the number of bugs caught in week one with the number of bugs caught in week two using the symbols  $>$ ,  $<$ , or  $=$ .

\_\_\_\_\_ ○ \_\_\_\_\_

**Challenge:** Compare the total number of caterpillars, caught over 4 weeks, with the total number of lady bugs.

\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ○ \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_



Name: \_\_\_\_\_ Date: \_\_\_\_\_

# On the Playground

Summative Assessment



1. Compare the expression using  $<$ ,  $>$ , or  $=$ .

$$66 + 104 \quad \bigcirc \quad 212 - 145$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}}$$

2. Solve for  $n$ .

$$n + 49 = 86$$

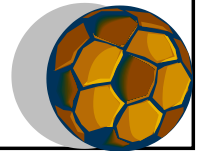
$$n = \underline{\hspace{2cm}}$$



Soccer Gear Sale	
Item	Cost
Socks	\$6
Goalie Gloves	\$8
Soccer ball	\$15

3. You have \$7 and you want to buy a soccer ball for recess. How much more money do you need?  
Write a number sentence.

\_\_\_\_\_



4. During 3<sup>rd</sup> grade recess today, 57 students came out to play kickball. Then, 19 students left to play tag. During 4<sup>th</sup> grade recess, 23 students came out to play kickball. Then, 17 more players joined the game. The teachers wondered which group was bigger. Which number sentence represents the relationship between the number 3<sup>rd</sup> grade students and the number of 4<sup>th</sup> grade students that played kickball today?

Ⓐ  $57 - 19 < 23 + 17$

Ⓑ  $57 + 19 > 23 - 17$

Ⓒ  $57 - 19 > 23 - 17$

Ⓓ  $57 - 19 > 23 + 17$

5.

**Step A.**

Compare the numerical expressions.

Use the symbols  $<$ ,  $>$ , or  $=$ .

$$467 + 153$$



$$532 + 168$$



**Step B.**

Explain why your answer is correct.

Use what you know about comparing numbers in your explanation. Use words and/or numbers in your explanation.

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## Answer Key

### Pre-Assessment Answer Key

1. 9
2. 98
3.  $24 < 52$
4.  $57 > 34$
5.  $16 + 9 = 25$  or  $25 - 16 = 9$

### You Do Day 1 Answer Key:

1.  $33 + 18 = 51$   
Mom gave me \$51  
Bonus: Accept all reasonable responses
2.  $42 - 23 = 19$  or  $23 + 19 = 42$   
Meghan read 19 pages on Tuesday

### Enrich/Challenge Key :

1.  $26 = 18 + 8$   
 $k = 8$
2.  $45 = 35 + 10$   
 $h = 10$
3.  $14 + 13 = 27$   
 $m = 13$

### Exit Ticket Day 1

1.  $y = 13$
2.  $r = 75$
3.  $16 + 8 = 24$  or  $24 - 16 = 8$   
72

### We do Day 2 “You Do” Answer Key

1. Ⓐ  $357 + 35 < 305 - 42$

### Enrich/Challenge Four Square Answer Key

1.  $116 < 492$
2.  $129 < 146$
3.  $187 > 112$
4.  $218 = 218$

## Independent Problem Solver

**Step A.**  $72 < 77$

**Step B:** For 2 points, students should solve each side of the inequality correctly. They should also explain the relationship using what they know about comparing numbers. For example: I know that 2 ones are less than 7 or 72 is 5 less than 77.

### Problem Solving Organizer:

$38 < 52$

I know 38 is less than 52 because 3 tens is less than 5 tens.

I drew a picture and noticed that 52 is more.

38 is 14 less than 52.

### We Do Day 3 Answer Key: B

#### The Bug Club Challenge

1	4 more than butterflies $\mathcal{C} = 12$	8	$\mathcal{L} = 3$	23
2	14	$\mathcal{B} = 12$	3 less than caterpillars $\mathcal{L} = 11$	37
3	$\mathcal{C} = 2$	3 more than ladybugs $\mathcal{B} = 15$	12	29
4	9	$\mathcal{B} = 4$	19 more than the caterpillars $\mathcal{L} = 28$	41

$23 < 37$

**38<54**

**Summative Assessment Answer Key**

1.  $170 > 67$
2.  $n = 37$
3.  $8+7=15$  or  $15-7=8$
4. A
5. Step A: 1 point correct answer:  $<$   
Step B: For 2 points, students should solve each side of the inequality correctly ( $620 < 700$ ). They should also explain the relationship using what they know about comparing numbers. For example: I know that 620 is less than 700 because there 6 hundreds are less than 7 hundreds.